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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,182	03/25/2004	Kuniharu Umeno	033036.076	6820

25461 7590 06/28/2006

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EXAMINER

SELLERS, ROBERT E

ART UNIT

PAPER NUMBER

1712

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/809,182	UMENO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Robert Sellers	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-9 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/21 &amp; 10/14/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

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1. Claims 1-9 are generic to the following disclosed patentably distinct species:

(C) The inorganic fillers.

(D) The curing accelerators.

(E) The silane coupling agents.

(F) the aromatic ortho-polyhydroxy compounds.

The species are independent or distinct because the myriad types of inorganic fillers, curing accelerators, silane coupling agents and aromatic polyol compounds necessitates numerous burdensome searches within classes 523 and 528. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed. Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species.

MPEP § 809.02(a).

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During a telephone conversation with Robert G. Weilacher on March 30, 2006, a provisional election was made without traverse to prosecute the following species:

- (C) Spherical fused silica.
- (D) triphenylphosphine.
- (E)  $\gamma$ -glycidoxypropyl trimethoxysilane.
- (F) 2,3-dihydroxynaphthalene.

Claims 1-9 are generic. Affirmation of this election must be made by applicant in replying to this Office action.

2. The word "hydroxyl" is misspelled on page 14, line 1. The silane coupling agent identified as  $\gamma$ -glycidylpropyl trimethoxysilane is an improper chemical name for  $\gamma$ -glycidoxypyl trimethoxysilane [emphasis added].

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Compound (F) described as “containing two and more hydroxyl groups combined with each of adjacent carbon atoms comprising an aromatic ring” on page 3, lines 14-16; page 13, lines 4-5; claim 1, the last two lines and claim 6, lines 2-3 does not clearly denote the location of the hydroxyl groups. More favorable consideration would be given to the replacement of the phrase with “containing two or more hydroxyl groups on adjacent carbon atoms in an aromatic ring.”

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Omum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-9 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 7,023,098 in view of Gallo Patent No. 6,432,540 and Iwasaki et al. Patent No. 6,242,110.

4. The claims of the patent define a composition for encapsulating a semiconductor comprising an epoxy resin such as a phenol aralkyl epoxy resin containing a biphenylene structure, a phenol resin, from 80 to 94 wt% (claim 7) of an inorganic filler, a curing accelerator, from 0.01 to 1 wt% of a silane coupling agent (claim 3) and at least 0.01 wt% of a compound containing two or more hydroxyl groups on adjacent carbon atoms in an aromatic ring. The phenol resin includes phenolaralkyl resin containing a phenylene or biphenylene structure (col. 4, lines 43-47).

5. The claimed phenol aralkyl resin of formula (2) wherein  $R_2$  is  $C_1-C_4$  is not recited. Gallo sets forth a coating for an electronic device (col. 2, lines 10-11) prepared from a molding composition of an epoxy resin containing a biphenyl or naphthyl moiety such as NC-3000P utilized in Example 1 of the instant specification on page 17, line 1 (col. 4, lines 15-18), a phenol novolac hardener possessing a biphenyl or naphthyl moiety such as MEH 7851 SS used in Example 1 (page 17, lines 3-5), preferably from 60-90 wt% of a filler such as silica (col. 4, lines 43-45), a catalyst such as triphenylphosphine (col. 4, lines 61-62), from 0.1-2 wt% of a silane coupling agent and two transition metal oxides.

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6. Iwasaki et al. is the equivalent of European Patent No. 915,118 cited in Gallo with respect to the NC-3000P epoxy resin and MEH 7851 SS phenol novolac hardener (Gallo, col. 3, lines 58-60 and col. 4, lines 15-18) directed to an semiconductor encapsulant prepared from a biphenyl-containing phenolic resin, a biphenyl containing epoxy resin (col. 7, Epoxy Resin 1), from 70 to 95% by weight of an inorganic filler such as fused spherical silica (col. 5, lines 39-43 and cols. 10-12, Table 1, Example 4),  $\gamma$ -glycidoxypopyl trimethoxysilane (col. 5, lines 51-52) and a curing accelerator such as triphenylphosphine (col. 5, lines 31-33).
7. It would have been obvious to employ the MEH 7851 SS phenol-aralkyl resin of Gallo and Iwasaki et al. as the phenol-aralkyl resin of the patent in order to enhance the flame retardance (col. 3, lines 29-35 and 44-47). Since the MEH 7851 SS is the same as that utilized in Example 1 of the specification, it inherently contains a C<sub>1</sub>-C<sub>4</sub> group within the R<sub>2</sub> group of claimed formula (2).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umeno et al. Patent No. 7,023,098 in view of Gallo and Iwasaki et al. for the same reasons of record as applied with respect to the obviousness-type double patenting explained hereinabove.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 2003-292730 (Japanese '730) in view of (Gallo Patent No. 6,432,540 and Iwasaki et al. Patent No. 6,242,110) and Japanese Patent / No. 3-29352 (Japanese '352).

8. Japanese '730 (translation, page 2, paragraph 5) discloses a semiconductor sealant comprising a diglycidyl ether of an phenol-aralkyl phenolic resin of formula (1) (page 2, paragraph 6), a phenol-biphenyl phenolic resin of formula (2) (page 2, paragraph 7), preferably from 75-92% by weight of an inorganic filler such as the elected species of spherical silica (page 3, lines 2, 5 and 6), a curing accelerator such as the elected species of triphenylphospine (page 2, paragraph 8), 0.3% by weight of the elected species of  $\gamma$ -glycidoxypropyl trimethoxysilane as a coupling agent (calculated from the example in the CAPLUS abstract) and more desirably from 0.01-1% by weight of an aromatic hydroxyl compound such as catechol or pyrogallol (suitable species of claimed compound (F) according to page 14, line 4 of the instant specification).

9. The claimed phenol-aralkyl resin of formula (2) wherein  $R_2$  is  $C_1-C_4$  is not recited. Gallo and Iwasaki et al. are described hereinabove.

10. It would have been obvious to employ the MEH 7851 SS phenol-aralkyl resin of Gallo and Iwasaki et al. as the phenol-aralkyl resin of Japanese '730 in order to enhance the flame retardance (col. 3, lines 29-35 and 44-47). Since the MEH 7851 SS is the same as that utilized in Example 1 of the specification, it inherently contains a  $C_1-C_4$  group within the  $R_2$  group of claimed formula (2).



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11. Japanese '730 discloses but does not exemplify catechol or pyrogallol as species of aromatic hydroxyl compound. Japanese '352 (abstracts) teaches a semiconductor sealant derived from an epoxy resin, a phenolic resin and a phenolic compound having OH groups at the ortho position such as catechol, pyrogallol or gallic acid

(Derwent abstract).

12. It would have been obvious to select the catechol or pyrogallol of Japanese '730 as the aromatic hydroxyl compound as taught by Japanese '352 in order to improve the moisture resistance leading to higher reliability (Derwent abstract, Use/Advantage section).

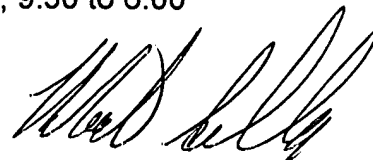
Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gallo and Iwasaki et al. in view of Japanese '352.

13. The references are described hereinabove. Gallo and Iwasaki et al. do not recite the claimed aromatic ortho-polyhydroxy compound. It would have been obvious to incorporate the ortho-phenolic compound of Japanese '352 into the formulations of Gallo and Iwasaki et al. in order to enhance the moisture resistance resulting in higher reliability.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remainder of the prior art has been cited in the Information Disclosure Statements but have not been submitted. Murata et al. Patent No. 5,597,876 is equivalent to Japanese Patent No. 7-9052.

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rs 6/21/2006

Monday to Friday, 9:30 to 6:00



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